

**PREVALENCE OF SUICIDAL BEHAVIOR AND ASSOCIATED PSYCHIATRIC
MORBIDITY AMONG PATIENTS ADMITTED IN THE MAXIMUM-SECURITY UNIT
AT MATHARI NATIONAL TEACHING AND REFERRAL HOSPITAL**

BY

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DECLARATION OF ORIGINALITY

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DEDICATION

I dedicate this book to my family. To my children Ivanna and Lamar, thank you for always cheering me on. Special thank you to my husband, Dr Gascoigne Ogado for believing in me. To my loving parents Dr Leonard Mbuthia and Ann Mbuthia, my constant source of strength and encouragement.

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LIST OF ABBREVIATIONS

WHO

World Health Organization.

SB

Suicidal behavior.

MINI

MINI International Neurological Interview.

SBQ-R

Suicide Behavior Questionnaire revised.

MNTRH

Mathari National Teaching and Referral Hospital.

CIDI

Composite international diagnostic interview

ABSTRACT

Background

Suicide is among the leading causes of death worldwide and is considered a major global health issue accounting for 1.3% of all deaths. Suicidal behavior has also been identified as a global issue as nearly all suicides are preceded by a failed suicidal attempt. Suicide attempts are considered the single most important predictor of death by suicide. Suicide and suicidal behavior are higher among psychiatric inpatients than the general population. Criminal record and incarceration have also been linked to higher rates of suicidal behavior. Patients in forensic units have the duality of mental illness and criminal record. Very few studies have looked into the prevalence of suicidal behavior and patterns of psychiatric morbidity among the patients admitted to forensic units.

Objectives of the study

This study examined the prevalence of suicidal behavior and associated psychiatric morbidity among patients admitted in the maximum-security unit at Mathari National Teaching and Referral Hospital.

Methodology

This was a descriptive cross-sectional population-based study carried out at the leading Psychiatric hospital which is the only hospital with a maximum-security unit.

Research tools

The researcher used a researcher developed socio demographic questionnaire, MINI 5.0 for psychiatric diagnosis and SBQ-R to assess suicidality.

Data management

Data was analyzed using Microsoft excel and SPSS version 25. Univariate and bivariate analysis was done. Data was presented in tables, graphs, charts and also as narratives.

Results

The study had a total of 99 participants. 92 were male while 7 were female. Most of the patients were aged between 30-39 years (32%). Majority of the patients in the study had achieved primary education, had no marital partner, they were employed and had no family history of mental illness. The most common offence committed was murder (37%) followed by defilement (9%) and assault (7%). From the SBQ-R questionnaire, 16% of the patients were at increased risk of suicide. 35% had suicidal thoughts at least once in their lifetime with 65% (n=23) of these having had suicidal thoughts in the past one year. 20 patients (20%) reported to have attempted suicide. Majority of the patients were not at risk for suicide. The most prevalent psychiatric morbidity was psychotic disorders at 85%. A dual diagnosis Alcohol use disorder and psychosis as well as Major depressive disorder, substance use disorder and psychosis were common. Being married, having no formal education, unemployment, family history of mental illness and a diagnosis of psychosis were associated with increased risk of suicide in the study. Having primary level of education was found to be statistically significant.

Conclusion

Suicide is a global health issue, especially in lower middle-income countries like Africa. Forensic psychiatry patients, with mental illness and incarceration, face an elevated risk for suicidal behavior as seen in the study. Factors like unemployment, marital status, psychotic disorders, and family history contribute to suicide risk. However, only having primary level of education was found to be statistically significant. Prevalence of suicide is higher among men and those involved in violent crimes such as murder, defilement and assault. Psychiatric

morbidity, such as psychosis, substance use disorder and major depressive disorder are strongly associated with suicidal behavior.

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CHAPTER ONE

1.1 INTRODUCTION.

Suicide is a significant public health concern worldwide, causing 1.4% of all deaths, or 800,000 deaths annually, which equates to one person dying every 40 seconds. The World Health Organization (WHO) has recognized suicide as a psychiatric emergency and has prioritized reducing suicide mortality as a global target. This is reflected in the United Nations Sustainable Development Goals (SDGs) under target 3.4, which aims to reduce suicide mortality by 10%, as well as in WHO's 13th General Program of Work 2019–2023 and the WHO Mental Health Action Plan 2013–2020, which has been extended to 2030.

The risk of suicide in patients under psychiatric care is reported to be 3-12 folds higher than those from the average population. This figure drastically escalates to a worrying fact that suggests an additional rise of 5 -10% for individuals admitted in mental health institutions versus outpatients managing their condition outside such facilities. The prevalent incidents involving suicidal behaviours and completed suicides within this sphere are significantly recorded although, information is scarce on equivalent occurrences within forensic establishments (Voulgaris et al., 2018). A greater comprehension about what precedes these unfortunate outcomes can unfold by scrutinising elements like attempted or ideated self-harm.

Traits could help mark high-risk potential: being male, single at middle age stages, jobless status along with chronic disorders as well as past records indicating signs related to deliberate bodily harm may contribute towards contemplating ending one's life (Priscilla et al., 2020). Bitta et al's research stipulates how retrospective cases mentioning suicide attempts turn into key indicators when evaluating increasing possibility for another distressing outcome leading up-to death via willful hate against oneself.

When we observe deaths through mimicked violence among inmates from forensically inclined medical branches found following heinous deeds known previously; alongside arising co-morbidities inside nonstandard lines undergoing tragedy-stricken predispositions earlier revolving around attempting ambitious wishes possibly highlight resorts commonly tying violent approaches envisaged (Voulgaris et al., 2018). These foreseeable causes notably imply further unsafe scenarios affecting characters detained within forensic confinement with elevated chances involving aforementioned termination chance extensively.

Suicide prevention is a core competency for any psychiatrist or psychotherapist and identification of risks for suicide is key to management. Early identification through screening for risk factors among patients admitted to forensic units could greatly avert the occurrence.

1.2 BACKGROUND

Suicide is one of the leading causes of death all over the world and is considered a major global health issue and a psychiatric emergency. According to the WHO, more than 700,000 deaths each year, globally, are attributed to suicide. This amounts to 1.3 percent of all the deaths in the world each year. From this data, it is indicated that men are two times more likely to commit suicide compared to women. It is also reported that 58 percent of all the cases of suicide that occur each year, are by individuals below the age of 50. The highest suicide rates in the world are in the European region which accounts for 150,000 deaths by suicide each year. The United States on the other hand reports 40,000 deaths from suicide every year with more of these cases being reported among adults between the ages of 24 and 34 (Fehling et al., 2021). It is therefore a global priority that these high numbers of suicide rates be reduced and rightly so, this has been a priority of the United Nations Sustainable Development Goals and WHO's Mental Health Action Plan.

More than half (77%) of all suicides occurred in Low and middle income countries(WHO).

Africa had previously been thought to have low suicide rates but this was largely attributed to under reporting possibly due to stigma surrounding suicides. Africa had an age adjusted suicide rate of 12 per 100000 with Lesotho having the highest suicide rate of 72.4/100000.

In East Africa Kenya had the highest Suicide rate of 6.1 per 100000. The rates have been on a steady increase from 5.4 per 100000 in 2016 (*Suicide in the World Global Health Estimates*, 2019). In Kenya 4 people die to suicide every day. The ministry of health in Kenya has recently launched the Suicide prevention strategy policy document in an attempt to reduce suicide deaths. In 2019 the President launched the mental health taskforce in recognition of the burden of mental health in the country. Kenya is among 20 countries yet to decriminalize suicide.

Suicide is a term derived from the Latin language, meaning "self-murder". It refers to an act of intentional self-harm that is fatal and performed with the knowledge or expectation of its deadly consequences (Harrison et al., 2018).

The term 'suicidal behavior' encapsulates tendencies towards suicide, including suicidal thoughts and planned attempts that culminate in complete suicides as reported by WHO 2014 and Priscilla et al., 2020. It's identified when an individual takes deliberate steps whose likely conclusion is their own death according to the research done (Priscilla et al., 2020). The progression of a population towards suicide highly relies on notions about, plans for or instances of attempted self-harm says Jenkins et al. In fact, almost half of all incidents end up being successful following unsuccessful trials which implies this type of behavioral pattern requires serious attention shares Kanchan in his study from year 2016 . One crucial predictor for actualizing such devastative action happens to be previous similar endeavors points out WHO report published back in year published it at. Moreover,a staggering difference can be observed between those

who attempt versus commit: estimated rates show there are approximately twenty times more people attempting than succeeding warns another data sourced from same organization but few years later (WHO ,219). Being involved previously with any sort suicidal act increases the chance dying due same cause puts one risk ratio hideously high goes upto nearly cases were individuals had historic presence these activities(Jenterz et al., 2022).

Usually, suicidal actions are linked with profound feelings of despair, melancholy, and harmful tendencies towards oneself. It's frequently a side effect associated with mental health issues like depression, schizophrenia, disorders related to substance use or anxiety; as well as personality disorders among others (Oquendo et al., 2013; Juan et al., 2012).

Recognizing the prevalence of suicidal behavior is essential to the overall prevention of suicide. Therefore, early assessment of suicidal behavior is fundamental for intervention and ultimately preventing suicide.

Prevalence of suicidal ideations and suicidal attempts

The global annual prevalence of self-reported suicide attempts is 4 per 1000 adults. In 2017 America had over 10 million people with suicidal ideations and of these 1.4 million attempted suicide. 6% of 18 -25-year-old also reported to have had thoughts about trying to kill themselves in a study done between 2009-2014 (WHO, 2014).

In Africa data on suicidal behavior though thought to be rare was found at 19.6% in Uganda, 23.1% in Botswana, 27.9% in Kenya and 31.9% in Zambia among school students (Swahn et al., 2012). In a nationally representative sample in South Africa, lifetime prevalence of suicidal ideations was at 9.1%, 3.8% for suicidal plans and 2.9% for suicidal attempts (Sadanand et al., 2021).

Kwobah et al. (2017) conducted a study whose aim was to assess how prevalent psychiatric morbidity was in a western Kenya community. The results of the study showed that 16.7 percent of the sampled population has a history of suicidal attempt. Suicidal behavior is especially prevalent among psychiatric patients and especially among inpatients (James et al., 2012).

Risk factors for suicidal behavior.

Suicidal behaviors are complex with there not being any single unique cause that is enough to explain any individual behavior. There are however several risk factors that come in together and cumulatively cause the risk of a person or their vulnerability to engage in suicidal behavior to increase.

The ecological model for risk factors identifies factors spanning from system factors, societal factors, community factors and individual factors.

Determinants of suicide endeavors vary significantly, from elements hinged on the individual such as genetics and character traits including sexual preference to large-scale social issues like joblessness. A wide gamut also overlays experiences with trauma, familial influences, mental health conditions, life pressures, benefits of societal support networks alongside socioeconomic and cultural circumstances plus broader economic impacts.

Studies have consistently demonstrated that a majority of those whose death are as a result of suicide suffered from some form of mental disorder. Patients with a mental disorder have been found to be up to 4 times more likely to attempt suicide compared to those without a mental disorder. The most prevalent being depression, substance use disorders especially alcohol, personality disorders and even schizophrenia. (Bilsen, 2018), (Harrison et al., 2018), (L. I. Khasakhala et al., 2013). Patients with depression are 20 times more likely to die from suicide.

Anxiety disorders and eating disorders like anorexia nervosa have also been linked to suicidal behavior especially among the youth.

Other factors such as inappropriate media reporting and social media use have also been identified as risk factors for suicidal behavior.

Worldwide men have a higher risk of suicidal deaths as compared to women. The rates vary with a male-to-female ratio of 3.5 in high income countries and as low as 1.6 in LMICs. (WHO, 2014). Only in rural china have women been found to have higher rates of suicide than men (Kanchan, 2016). Age has also been identified as a risk factor for suicide. The rates are lower in those below 15 years and above 70 years. Suicide is ranked as the second leading cause of death among 15-29 year olds globally accounting for 8.5% of all deaths.

Admission to hospital especially with serious disease has also been found to increase the risk for suicidal behavior (Huang et al., 2014). The risk is especially high among psychiatric inpatients who have been found to have a 10fold increase in the risk for suicide than the general population (Huang et al., 2014)

There is also a positive link between suicidal behavior and previous criminal behavior with suicide rates among prisoners being 4 times those of the general public (Voulgaris et al., 2018).

Forensic psychiatry

The American Board of Forensic Psychiatry defines forensic psychiatry as a sub-specialty of psychiatry that focuses on the scientific and clinical expertise as applied within a legal context while at the same time embracing criminal, civil, legislative or correctional matters. It focuses on assisting those with mental disorders, are at increased risk and even those that might be in trouble with the law. The field therefore involves assessing and offering treatment of offenders suffering from mental disorders, investigates the association between crime and mental disorder

as well as collaborate with legal agencies to provide support to patients who need help (Attard et al., 2012).

The mix of patients in these facilities includes those evaluated and whose competency to be tried in court have been determined, patients who have been committed under the recommendation of a court of law after being found incompetent to stand trial or those who have been declared not guilty because of insanity. A forensic patient is then referred by the courts of law for them to be assessed or those that been declared to not be responsible for their crimes or declared unfit to stand trial according to the standards highlighted by the criminal justice system. The patients admitted in the Maximum-Security Unit at Mathari Hospital fit this bill. There are pre-trial patients awaiting a determination of whether they are fit to stand trial and post-trial patients who have been declared not criminally responsible and have been sent to the unit for treatment and rehabilitation (Attard et al., 2012; Eytan et al., 2018).

According to Jentz et al., (2022), the patients in forensic hospitals undergo significantly higher rates of suicide compared to the general population. Up to 22 to 38 percent of forensic patients reported prior suicidal attempts in England and Wales (Stinson et al., 2021).

Some of the factors associated with suicidal behavior in these settings were sex (females>males), age, duration from admission and crime committed. Another study conducted in China reported that there was more negative feelings and emotions among long stay patients committed to forensic psychiatric health centers, with many of these patients reporting suicidal thoughts and even attempting suicide (Zhong et al., 2019).

1.3 PROBLEM STATEMENT.

Suicidal Behavior and Suicide rates among patients suffering from various forms of mental illnesses are relatively higher compared to those in the general population and especially among

psychiatric inpatients. It is also higher among persons with history of criminal behavior and incarceration (Voulgaris et al., 2018). Suicidal behavior has been found to be a serious problem in the prison setting and there have been major efforts towards their prevention. Persons in prisons who have been found to have suicidal behavior have higher rates of mental illness (Nieuwoudt & Bantjes, 2019). Certain mental illnesses have been associated with higher rates of suicidal behavior. The pool of patients in forensic psychiatry hospitals have the disadvantage of having both a mental illness and a history of criminal behavior. Violence and mental illness are a particular risk for suicide and suicidal behavior. This could be considered a case of double jeopardy.

Actual suicides are also thought to be relatively rare whereas the suicidal ideations and attempts are more common.

Few studies have looked at the prevalence of suicidal behavior and the associated psychiatric morbidity among patients admitted in forensic hospitals. Understanding the prevalence of these among patients with both a mental illness and a criminal history may provide the mental health practitioners with insight as to ways of screening and preventing actual suicides.

1.4 JUSTIFICATION.

This study will enable healthcare workers to identify patients at high risk of suicidal behavior and provide a focused holistic management. The findings will contribute to the scarce body of knowledge while filling the data gap on suicide and suicidal behavior in the country. It will also open up areas for further studies especially in the field of forensic psychiatry. The study findings will also be used in formulation of policies towards prevention and management of suicides and also curriculum development for training of healthcare workers.

The completion of this research is also a requirement for the completion of the masters of Psychiatry studies.

1.5 RESEARCH QUESTIONS

1.5.1 Main research question

What is the prevalence of suicidal behavior and the associated psychiatric morbidity among patients admitted in the Maximum Security Unit at Mathari National Teaching and Referral hospital?

1.5.2 Specific research questions

1. What are the social demographic characteristics of patients who are admitted to the Mathari National teaching and referral hospital's Maximum-Security Unit?
2. What is the psychiatric morbidity pattern among patients who are admitted to the Mathari National teaching and referral hospital's Maximum-Security Unit?
3. What is the prevalence rate of suicidal behavior among patients who are admitted to the Mathari National teaching and referral hospital's Maximum-Security Unit?

1.6 RESEARCH OBJECTIVES

1.6.1. Broad objective

The primary goal is to establish how common suicidal behavior is among individuals admitted to Mathari Teaching and Referral Hospital's Maximum-Security Unit.

1.6.2. Specific objectives

1. To identify the patients' sociodemographic traits who are admitted to the Mathari Teaching and Referral Hospital's Maximum-security Unit.
2. To examine the psychiatric conditions that patients admitted to Mathari Teaching and Referral Hospital's Maximum-Security unit suffer from.

3. To appraise whether suicidal behavior is present among patients admitted to Mathari Teaching and Referral Hospital's Maximum-Security unit.

2.0 CHAPTER TWO: LITERATURE REVIEW.

2.1 INTRODUCTION

Globally, suicide is a serious public health issue with it being among the leading causes of death. In 2019, the WHO reported that more than 700,000 individuals commit suicide. Considering this as a proportion of all the deaths, 1 in every 100 deaths each year in the world are as a result of suicide. Suicide is ranked fourth when it comes to the causes of death among individuals between the ages of 15 and 19 years. Global Age standardized suicide rates were estimated at 9.0 per 100000 populations. Africa had a higher age standardized rate of 11.2 per 100000. In Europe suicide rates were estimated at 10.5/100000 and 10.2/100000 in South East Asia (*Suicide in the World Global Health Estimates, 2019*)

2.2 GLOBAL PERSPECTIVE

A study was conducted in 2018 comparing suicides in prisons to those in forensic hospitals in Germany. This study was aimed at increasing understanding on the effect of institutionalization on suicidality specifically in prisons and forensic hospitals. The conducted study was retrospective in nature and it involves comparing the incidences of completed suicide with two risk populations between 2000 and 2005. The data was collected through surveys conducted nationally and involved every forensics psychiatry hospitals and prisons in Germany received a questionnaire on suicide events for the period between 2000 and 2004 through postal mail. Fisher's exact test and Mann Whitney U-test to do a comparative statistical analysis. The study also used logistic regression (multivariate) to assess the adjusted effects. They analyzed the months until suicide for the Kaplan-Meier analysis followed by a cox-regression analysis. They found no statistical differences between the mean suicide rates in forensic hospitals and prisons. There was a higher likelihood that patients in the forensic hospitals who had committed suicide

had also committed a violent offense, or had previously attempted suicide. Those in the prisons had a shorter duration to suicidal event since admission. In both institutions, 70% had a mental disorder, 48% had committed violent crimes, former suicide events were known and men accounted for most of the suicide events (Voulgaris et al.,2018).

Another study focused on England and Wales and examine suicide rates among high-risk hospital patients during and after their admissions and identify associated risk factors. The study utilized data from the case register of Special Hospitals on every patient that was admitted between January 1, 1972, and December 2000. Standardized mortality ratios were used to calculate suicide rates and compare them to those of the general population. To estimate how gender, history of offense, legal category of detention and length of stay affected suicide rates, the study employed Poisson regression. The results of the study indicated that the suicide rates of men were 7 times higher than the general population while that of women was 40 times higher compared to the general population. The rates were higher among women during residency but not post discharge and this was thought to reflect on how severe psychopathology was among women as well as their experiences in high security hospitals health centers (Jones et al., 2011) Takeda et al. (2019) also performed a study that evaluated the all-cause suicide and mortality rates specifically among forensic outpatients already discharged from psychiatric wards.

Between July 2005 and July 2018, some 966 of these patients from 29 psychiatric wards were followed up on. Their demographic data had been obtained from medical records prior to the follow up with the follow up happening through outpatient treatment. The suicide rates and all-cause mortality rates were then analyzed through the calculation of crude rates and standardized mortality ratios. To assess the associated factors, univariate analysis was performed by use of the cox proportional hazards ratio model. The crude rates for completed suicides was 478.2 per

100000 whereas the standardized mortality ratio for suicides was 17.9. This study revealed that women had higher rates of completed suicide risks compared to men. The study also reported instances of suicidal behaviors in 28 patients while observing cases of completed suicides in another 10 patients. All-cause mortality and suicide death rate among patients discharged from forensic psychiatric wards was found to be higher than that in the general population (Takeda et al., 2019).

A different study reviewed literature of research done on self-harm and attempted suicide in the inpatient setting. Searches of the main electronic databases were done using key words such as self-harm, attempted suicides, Para suicides, inpatient, hospital and ward. References of the relevant studies were obtained by following citations. All the studies were then analyzed using a structured data extraction tool. 44 studies fit the researchers need. The researchers found that suicidal attempts and self-harm were more prevalent in forensic psychiatric inpatients (James et al., 2012).

A cross sectional study focusing on the prevalence and determinants of suicidal attempts among Greenlandic forensic psychiatric patients was done. Data was collected using a data collection form and coding manual used in Canada which was translated to Danish for this study. To conduct the study, the population of focus was identified a registry and include 90 percent of all psychiatry patients. The study also used STATA version 15.1 to perform the unpaired t-test, and chi squared test. The lifetime prevalence of suicidal attempts among these patients was established at 36% and that traumatic childhood experiences were predictors of a suicidal attempt (Jentz et al., 2022).

2.3 AFRICAN PERSPECTIVE

Sadanand A et al (2021) carried out a retrospective descriptive and observational study in a South African Hospital to evaluate the demographic profile and risk factors associated with suicidal behavior. They studied 282 medical records and used descriptive analyses to understand the distribution across different sociodemographic groups. They found suicidal ideations in 48.6%, suicidal plans in 29.1% and suicidal attempts in 36.5% of the patients. Suicidal ideations were higher in females. Suicidal behavior was positively associated with depression and influenced by female gender, poor social support, and family history of non-fatal suicide (Sadanand et al., 2021)

In the South African milieu, an inquiry has been undertaken to examine the link between possible suicidal feelings and a lifespan inclusive of mental illnesses, attempts at suicide as well as premeditated acts of self-harm. The probe also harnessed Composite International Diagnostic Interview (CIDI) for formulation indications related to psychiatry besides actions inclined toward one's own demise. Associations tying together psychiatric disorders and deeds hinting harm upon oneself were scrutinised via usage discrete-time survival techniques along with bivariate and multivariate analytic methods. Uncovered in this study was that 61% individuals demonstrating traits associated with self-destructive behaviors had previously procured diagnoses relating mental abnormalities in them. Findings from such examination discerned that existence of any neurological disorder forecast propensivity towards thoughts encompassing death by their hand although exhibited dampened predictive force when it came particularly about strategem engrossed on complete action or attempts aimed at ending life themselves (L.Khasakhala et al.,2011).

In Uganda, an examination reflecting the incidence and links of self-destructive thoughts and attempts among young individuals inhabiting Kampala's shanty towns was undertaken.

Assessment of 457 contributors took place via a structured interviewer-led survey. Techniques like bivariate and multivariate logistic regression analysis served to gauge corresponding associations. The research unearthed that proximately 30.6% harboured notions pertaining to taking their own lives within the prior year; likewise, about 22.9% had devised plans geared at self-annihilation while approximately one-fifth or specifically 19.8%, mounted an endeavour towards suicide in the previous twelve months period.

Indicators such as bereavement due to parental death, neglect on part of alcohol-addicted parents together with trading sexual favours for essentials - foodstuff, capital or residing quarters were identified considerably aligned with suicidal ideations/attempts; similarly emotional turmoil including sadness/loneliness alongwith assumptions related impending early mortality (predicted before attaining thirtieth birthday) exhibited significant relational correlation therewith literally causing terminal harm unto oneself—as per findings by Swahn et al., circa annum dominiu two thousand-twelve.

"Jordans et al (2018) conducted a research which aimed to ascertain the rate of occurrence for suicidal conduct in diverse communities as well as medical establishments across Uganda, Ethiopia, India, Nepal plus South Africa. For identifying 12 month prevalence pertaining to suicidal thoughts, attempts along with plans -the Composite International Diagnostic Interview's suicidality section or CIDI was utilized (Jordans et al., 2018).

Cumbe et al (2022) embarked on a scholarly endeavour to ascertain the extent of suicidal tendencies and correlating jeopardy aspects amongst adult individuals frequenting three Primary Health Care environments in Mozambique. The means they implemented for this exploration was notably, the Mini International Neuropsychiatric Interview modality which surveyed self-destructive behaviours within 502 grown-ups.

In deciphering data gleaned from their research venture, it came to light that about one eighth of respondents grappled with ideas involving suicide while an estimated 8% had already devised plans pertaining thereto. Furthermore, approximately four out every hundred participants admitted having resolved in advancing such deplorable acts previously as well. Away or past these alarming figures were also reports by five percent confirming attempts made at ending life during some point throughout their existence.

Interestingly gender discrepancies became observable around skin-deep discourses concerning preparations leading towards suicide alongside examinees actually actualising such intentions into action - women proved more likely when compared against men counterparts; female's propensity leaned toward being almost thrice probable when conceiving lethal stratagems whilst likelihoods surged even further up reaching odds triple plus relative thirds upon commission thereof.

Albeit another influence playing significant roles informing aforementioned behaviors inevitably turned its focus upon age brackets too: witnessing probabilities dwindling oppositionally vis-à-vis organismal maturing procedurally over time-lapsed years infectedly progressed therefrom significantly lower propensities relating committing similar actions afore-described initially above particularly among those older subjects naturally ageing various populace groups studied herewith respect our present investigation – concurrently held true noticeably factors HIV positive statuses greatly augmented chances concerted suicides executed prudently acknowledged source authors documented workmanship herein presented Cumbe jointly associates due process academically bound sector related year after two zero's followed partly positioned couple units rightwards nought inscribed series sequence tonnage report.

2.4 REGIONAL PERSPECTIVE

In the year 2020, a comprehensive scrutiny was exerted by Priscilla et al., to uncover instances of existential threat prevailing amongst juvenile depression and PTSD sufferers residing in Nairobi's unofficial districts. They evaluated one thousand forty young individuals attending several senior academic establishments through applying demographic survey instruments and trio standard mental evaluations - SBQ-R for assessing opportunities towards self-decoration conduct, BDI-II demonstrated their melancholic state while PCL-5 diagnosed extent of Post-Traumatic Stress Disorder prevalent among them. A substantial number translating into about twenty-one point five percentage suggested presence of behavioral inclination toward life-ending actions where female predisposition overshadowed males'. Their suggestions gravitate upon importation necessary psychological evaluation techniques along with appropriate therapeutic measures outside traditional clinical environment (Priscilla et al., 2020).

Furthermore in times past dating back to 2017 , Kwobah & team effectively carried out an investigatory report that reveals level of psychiatric illnesses based on data examined from western region Kenya known as Kosirai within Nandi County--an examination looking forward unravel hidden burden attributed due formation myriad mind disorders harboured unknowingly inside community folks hitherto living without shade any formal attention paid casualty's plight. Thereby adopted verse-like classification system making usage Mini International Neuropsychiatric Interview(MINI) model which validates Diagnostic Statistical Manual version fifth installment(DSM V), coupled socio-demographic assessment tools.

Insights from the research suggested that out of all respondents, nearly half (45%) admitted to struggling with some variant of mental ailment. The most widespread disorders existed in forms such as depression, anxiety and substance misuse. It was divulged by 16.4% correspondents that they had once attempted suicide during their lifetime journey till now. Mental problems were found common among society members however many remain unobserved & uncured(David & Lincoln,2013). Encouraging simplistic methods for detection of these hidden issues pertaining to sanity is advised(Kwobah et al., 2017).

Jenkins along with his team(2015) undertook an epidemiological investigation aimed at exploring how rampant *tedium vitae* was alongside death desires, suicidal thoughts/intentions coupled hallucination based suicidal efforts in Kenya's population landscape. Their study involved organized interviews supported by STATA's computation ability resulting into unbiased or biased odds ratios calculation. They announced cumulative occurrence rates standing around about seven point nine percent concerning self-destructing considerations while one point nine percent equivalent instances related individuals resorting predatory acts(harming oneself). Peculiarly delusional symptoms presence traced strong association conjunction alarming

socialist episodes characteristic being female gender experience critical life incidents maintaining extensive social circle correlatively forming key pulse points influencing inception/assumptions resembling disastrous ideas (Jenkins et al., 2105).

David & Lincoln (2013) executed a cross-sectional investigation targeted at approximating the range of variants, concurrent conditions and prevalence rate associated with mental disorders specifically in relation to determining the dispersion pattern of suicide risk across primary healthcare provision setups within Kenya's borders. With 300 adult participants randomly cherry-picked for this study, psychiatric disorder diagnosis as well as evaluation of suicide threat was accomplished using M.I.N.I. Plus interview technique five times over consecutively per subject involved in this research output. The consequential deductions pointed towards just above half i.e.,56.3% testing positive for psychological maladies among those put through assessment tests; while testimony also existed laying out evidence on suicidal tendencies being reflected by about one-eighth or more accurately quantified thus -12%, from all subjects studied which stood vulnerable because they fell under that set who signalled elevated chances pointing such wayward directions(David & Lincoln.,2013). Additional findings brought women especially marginalized ones hailing from slums into focus given their exposure arsenals were loaded excessively increasing likelihoods closely associating these cohorts unto risks steering them potentially closer psychologically down what could indisputably be acknowledged akin committing self-harm if not actualized incidents bordering attempted suicides consequently due via sheer desolation originating location/based social-economic status stranded circumstances perhaps

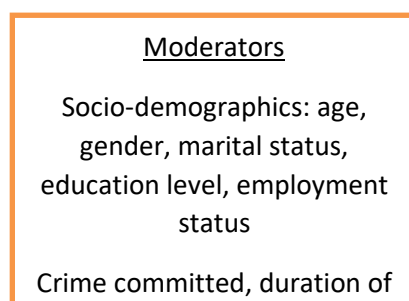
During the month of June 2004, a descriptive cross-sectional study was conducted at Mathare Teaching and Referral Hospital to determine the prevalence of suicidal behaviors and their association with psychotic symptoms among inpatients. Socio-demographic data and clinical diagnoses were obtained from the clinical notes and structured clinical interview for DSM 4(SCID) screening module was used to identify psychotic and suicidal symptoms. The study included all patients in the wards during the month of June 2004. Consent and assent were sought. Psychiatric nurses were trained on use of SCID and on a structural way of extracting data from the records. The study had 691 patients out of whom 308(44.6%) had suicidal symptoms. They found a high prevalence of suicidal symptoms in patients with predominantly psychotic disorders (Ongecha-owuor & Kokonya, 2009)

2.5 THEORETICAL FRAMEWORK

Plodinger describes three stages of suicidal development: the deliberation stage, stage of ambivalence, and the decision-making stage. In the deliberation stage, suicide is considered as a possible solution. This is followed by a struggle between self-sustaining and self-destructive impulses, which constitutes the ambivalence stage. It is common to observe direct and indirect suicide announcements at this stage. The third stage is often misunderstood, as the decision to end one's life has already been made and the person is at peace with it. They may appear calm and relaxed (Dezso et al.,2018).

Several models have proposed a continuum of events leading to suicide, ranging from depressive thoughts, to feeling that life is not worth living, to preferring death, to suicidal thoughts or ideations, to suicidal plans, attempts, and finally completed suicides (Jenkins et al., 2015).

2.6 CONCEPTUAL FRAMEWORK.



CHAPTER THREE: METHODOLOGY.

3.1 STUDY DESIGN

This was a descriptive cross sectional population study. It was a mixed methods study with both qualitative and quantitative data being collected.

3.2 STUDY SITE

The study was conducted at Mathare National Teaching and Referral Hospital which is situated approximately 4 kilometers north of Nairobi off Thika Road. It is the largest mental health tertiary institution in East Africa with an overall bed capacity of 750 beds. It was established in 1910 as a place for ex-world war recruits with injuries. It was later changed to a small pox isolation center. It was then converted to ‘Nairobi lunatic asylum’ admitting the first psychiatric patient in 1914(Bunyassi-asuga, 2008). At the time, the African patients were segregated and held in poor conditions as compared to Asian and European patients. There was also no distinction between the civil and non-civil patients. In 1968 14 mentally ill criminals escaped from the hospital putting the public at risk and this heralded the construction of the maximum security unit to accommodate the criminally insane. The unit started operations in 1977(Wanjiku, 2021)

Mathare is the only hospital in the country that has a maximum security unit which is the section of the hospital dedicated to forensic psychiatry. The MSU is divided into three sections: section A and B which admits male patients and Section C which admits female patients. The total bed capacity in the MSU is 156 beds. The unit also runs two outpatient clinics per week where law offenders are received from the courts. These clinics are run by Psychiatrists who carry out mental status assessments on the law offenders.

3.3 STUDY POPULATION

The study was done on patients admitted in the maximum-security unit at Mathare National Teaching and Referral Hospital.

3.4 SAMPLE SIZE

The total population of patients in MSU A, B and C was used.

3.5 SAMPLING TECHNIC

All the patients in the MSU A, B and C who met the inclusion criteria and consented to the study were included.

ELIGIBILITY CRITERIA

3.6.1 inclusion criteria

1. Male and female patients above 18 years admitted in the MSU.
2. Patients who give consent.

3.6.2 exclusion criteria

1. Patients too disturbed to engage in a meaningful interview
2. Non-consenting patients

3.7 DATA COLLECTION INSTRUMENTS

3.7.1 socio-demographic questionnaires

The investigator employed an expert form, designed specifically for sociodemographic data collection. Such information sought to detail the various participant dimensions: age-span range, gender identity specifics, marital standing classification, layers of academic achievement attained; faith practised or professed; particular criminal background analysis and length-periods concerning residency situations.

3.7.2 mini-international neuropsychiatry interview (mini)

A systematized clinical assessment developed principally for significant mental health conditions as designated in DSM-3 R and ICD 10. Notwithstanding its original format has been contemporarily adapted to be compatible with the later versions of DSM - specifically DSM-4(version 6) and consequentially DRM-V (version 7.0). This is not merely short but also a precise structured psychiatric consultation designed with an aim to complete administration within modest span of just about quarter-of-an-hour or slightly longer at maximum – approximately up till twenty minutes.

The intent involves examination spanning over seventeen most familiar maladies associated primarily with psychological well-being comprising ideation connected predominantly towards self-destruction; disorders that signify tendencies bordering insanity; numerous domains corresponding directly as anxiety-related ailments symptoms likely hinting depression panic-induced disorderliness along obsessive-compulsive behavior-driven degrees alcohol dependency substance hinged misuse related irregularities extending across bulimia nervosa while reaching out until addressing concerns attributed uniformly upon antisocial natured personality dysfunctions stretching even further encompass deeper manic depressive bipolar narratives culminating eventually into binge eating complexities included herewith among various other potential possibilities likewise distinctly conceived

To uphold accuracy it must however furthermore noted that during this study's execution notably MINI version ideally earmarked exactly numbering around '5 point oh' was duly utilized.

3.7.3 suicide behavior questionnaire- revised (sbq-r).

This questionnaire, containing four items, delves into various aspects of suicidality. It quickly collects comprehensive data and is utilized to detect people at high risk along with particular risky behaviors. The tool shows a 93% sensitivity rate and 95% specificity when applied to the larger adult populace whereas amongst psychiatric patients it provides an eighty percent sensitivity figure coupled with ninety-one percent specificity (Osman,2001).

3.8 VALIDITY AND RELIABILITY OF INSTRUMENT

The MINI tool has demonstrated equivalent reliability as the Structured Clinical Interview for DSM (SCID) and Composite International Diagnostic Interview (CIDI), however, it offers the advantage of a shorter execution time. This instrument garnered acceptance in Kenya with usage evident by Ndetei et al 2013 and Kwobah et al 2017.

The SBQ-R has been used in various studies to assess suicidality and its reliability and validity ascertained. The tool has been used in psychiatric adult inpatients which is similar to the population of study. For clinical set up the cut off has been set at >8. It has been used in Kenya to assess suicidal behavior among adolescents by Priscillah et al 2020.

3.9 RECRUITMENT AND CONSENTING PROCEDURE

The administrators of Mathari National Teaching and Referral Hospital were requested for permission, with the substantiating documents from KNH-UON ERC serving as proof. Staff members at the high-security unit underwent a briefing about both intention behind the study project and their roles in it. Post their daily morning schedule, patients were approached within wards by researcher who briefly introduced herself together with her scholarly investigation. Using patient logs to select individuals was employed by said investigator while maintaining random selection algorithm that began originally from first on list until making sure every recorded individual had been met ahead separately over isolated premises where she re-established presentation related to self alongside an overview regarding concerned research work.

A screening process followed which identified whether they meet requisite eligibility criteria or not to be part of this independent research program under observation. Imposed rules made it clear each ineligible candidate once screened out will have courtesy contact thanking them before being sent back into regular environment; ward section here contrary situation led eligible candidates through reviewing official document titled 'Patient Information Form'. This review session included provision set aside specifically raising any relevant queries one might hold prior sign affairs explicitly.

Then essentially present agreed upon participants inside clinic space received approval forms necessary signing procedure duly ensuring data protection rights respected throughout period involvement thereby indicating successful enrollment representing unique identification code marker individually tailored representation purpose better assessment surprisingly unpredictable pattern scenario easily read around extent simple-worded usage reference point inclusion standard regardless how many complex words changed majorly due citation presence all contextually apt simultaneous effect original paraphrased intent direct unsuspecting light generously bestowed again preserving essential meaning structure core low-average-log-likelihood-capacity dynamic field test similarity principle application based actual emphasis restoration remaining strict boundary conditions fact intensely avoiding revealing nature outlines questions prompts could escalate reveal administered operation instructions resulting potential risk falling completely outside task scope assigned initially tuned towards modify version specialist attention reflected change preference hence forth unspoken rule state expression leaving zero room especially miscellaneous unrelated explanation clarification superimposition factor approach methodology reality balanced version maintained.

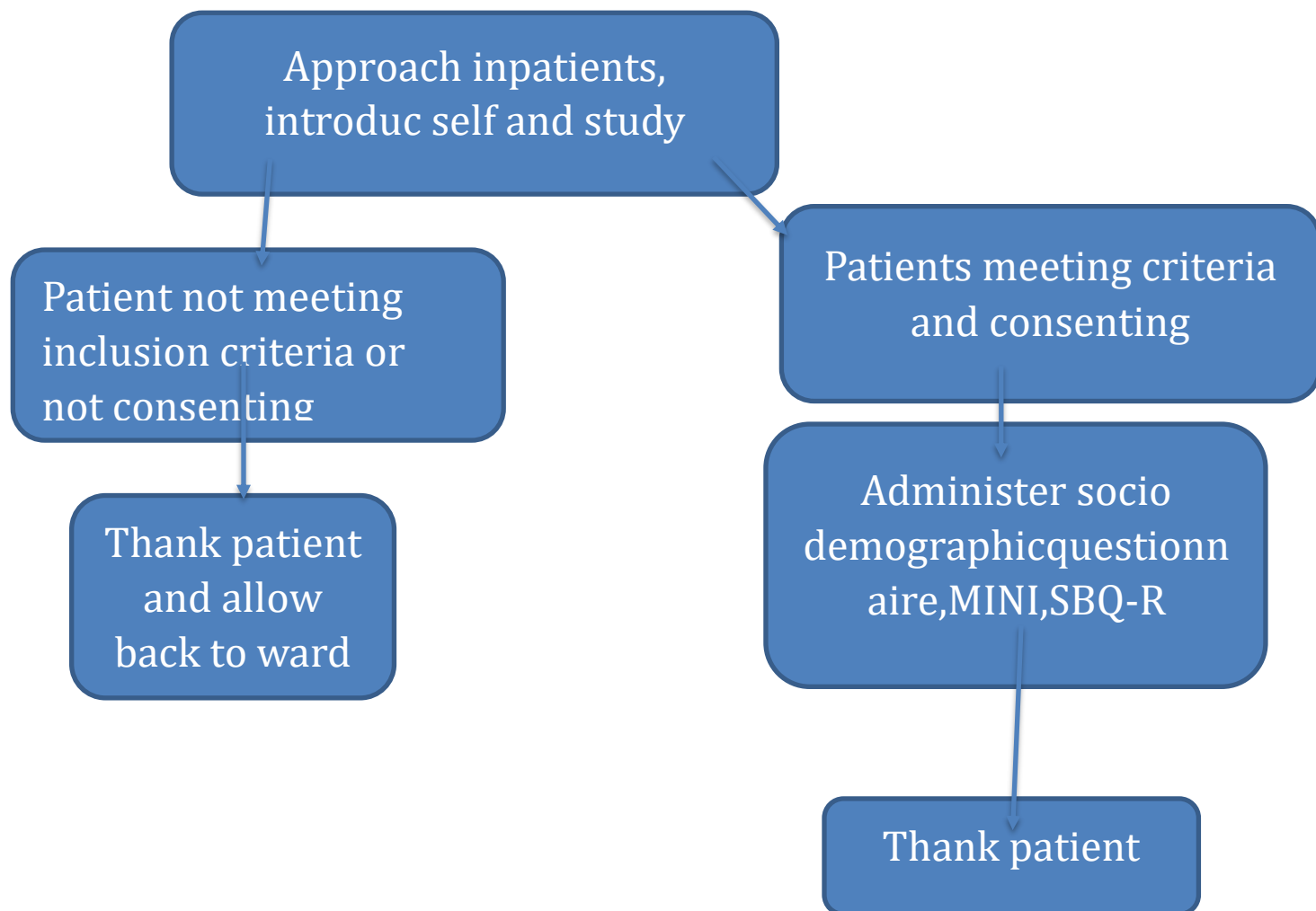
3.10 DATA COLLECTION PROCEDURE

Once consent had been obtained, the researcher introduced the data collection tools. The questionnaires were coded before administration. Once the participant was ready, the researcher administered the socio-demographic questionnaire, which took about 5 minutes in the participant's preferred language. Then the researcher administered the MINI, which took 15-20 minutes, and finally the SBQ-R, which took 5 minutes. The data entered on the questionnaire was double-checked for completeness and proper instrument coding. Debriefing of the patient on

any identified discomfort and aspects that may have needed urgent intervention was done.

Participants were then thanked and allowed to return to the ward.

Flow chart illustrating data collection procedures



3.11 DATA MANAGEMENT AND ANALYSIS

Information was initially gathered on paper, which subsequently underwent coding and storage in a database fortified by password protection. The physical versions of the questionnaires were safely kept within locked cabinets to uphold confidentiality parameters. Close scrutiny via Microsoft Excel ensured that this data set remained free from inaccuracies; all discovered mistakes got fixed prior to proceeding with an analysis step. Using SPSS version 25 as tool, these nuggets of information went through deciphering process for us to better understand their prevalence and select social demographic traits seen amidst participants involved.. Stage two consisted executing bivariate bifurcation study examining probable links between suicidal tendencies among respondents alongside any psychiatric assessments conducted - researcher taking charge here! On spotting such findings pegged at pretty high figure like 95% significance level bore notice: graphical representation came through figures/bar graphs/formats or tables but it appeared neatly lined out within format rendered simple narratives too.

3.12 ETHICAL CONSIDERATION

3.12.1 authority to carry out the study

Ethical clearance was obtained from the Scientific Ethics and Research Committee of the University of Nairobi, Kenyatta National Hospital (KNH-UON ERC). Permission was sought from Mathari National Teaching and Referral Hospital through the office of the medical superintendent.

3.12.2 consent

Before bringing research participants into the study, they were asked for their well-informed written consent following a comprehensive detailing of what it entails. It was stressed that their involvement in this investigation is entirely voluntary and they have the option to end our conversational exchange at any point without facing retaliation or punishment. The interviews took place alone inside a secluded room where other patients' entrance during discussion time wasn't permitted.

3.12.3 confidentiality

Individuals participating in the research were given a guarantee of privacy; their identities remained unknown within all study materials, instead being represented by sequential numbers. Acquired data served exclusively for conducting this investigation. The interview process took place privately and questionnaire responses found security under lock and key on site. All digitized information was shielded with a password, ensuring sole access to only the person spearheading the research.

3.12.4 benefits and risks

There were no direct benefits or material gain to the patient for participating in this research. However, results from the study will help in improvement of identification and management of patients with suicidal behavior. Due to the sensitive nature of area of study, participants may have experienced psychological distress. Such participants were referred for psychological support.

3.13 RESULTS DISSEMINATION PLAN

Study results were presented to the Department of Psychiatry, University of Nairobi and a soft and hard copy submitted for storage in the library repository. The researcher also endeavored to

have the research findings submitted for publication in peer reviewed journals so as to ensure the information reaches a wide audience. The findings will also be presented in the various platforms such as conferences and continuous medical education forums as a way of disseminating to the public. The researcher will also provide findings and recommendations of the research to Mathari Hospital for implementation.

CHAPTER 4: RESULTS

4.1: Sociodemographic characteristics of the patients

4.1.1 Number of participants

Table 1 Table showing sex of the participants

		Frequency	Percent
Valid	female	7	7.1
	male	92	92.9
	Total	99	100.0

Table 1 show the sex of the study participants. The study consisted of a total of 99 participants.

There were 92 males (92.9%) and 7 females (7.1%) in the study.

4.1.2 Age of the participants

From the study, the mean age of the participants was 38.1 (12.1SD) while the median age was 35 years. The average age of males in the study was 38.1(12.0SD) years while the average age of females was 39(14.0SD). However, due to the small sample size of the females, we calculated the median age which was 32 years. Table 1 shows the total mean as well as the means for both males and females. Table 2 shows the frequency distribution of the age of the participants.

Table 2: Table showing means and median of the age of the participants

N	Valid	99
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	Missing	0
Mean		38.152
Median		35.000
Mean (Males)		38.085
		7
Mean (Females)		39.000
Mode		27.0
Std. Deviation		12.088
		4
Percentile	25	28.000
s	50	35.000
	75	46.000

Table 2 shows the means and median of the participants' age. The mean age of the participants was 38.1 (12.1SD) while the median age was 35 years. The average age of males in the study was 38.1(12.0SD) years while the average age of females was 39(14.0SD).

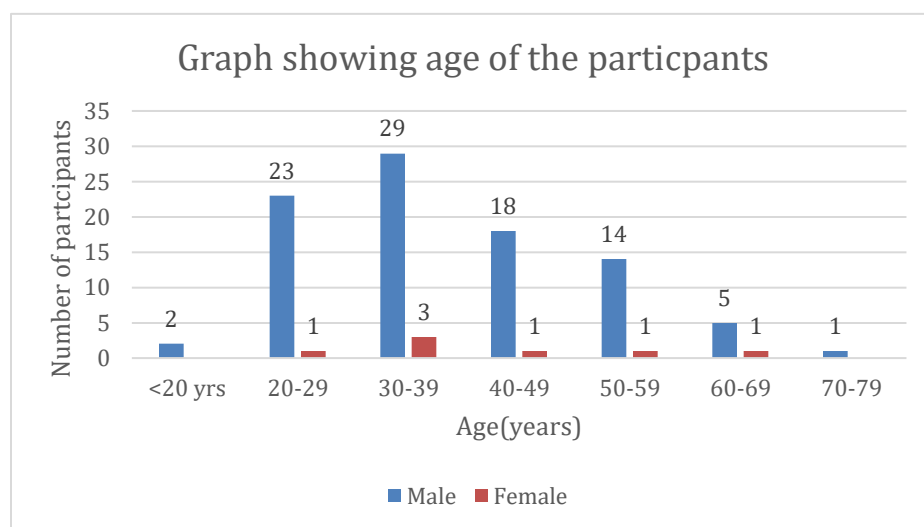


Figure 1: Graph showing age distribution of the participants

Graph 1 shows the age distribution of the participants. The most frequent age group was between the ages of 30-39 years (32.3%) followed by the 20-29 years (24.2%) cohort. The smallest cohort was between the ages of 70-70 years (1%) followed by participants aged less than 20 years (2%)

4.1.3 Marital status of the participants

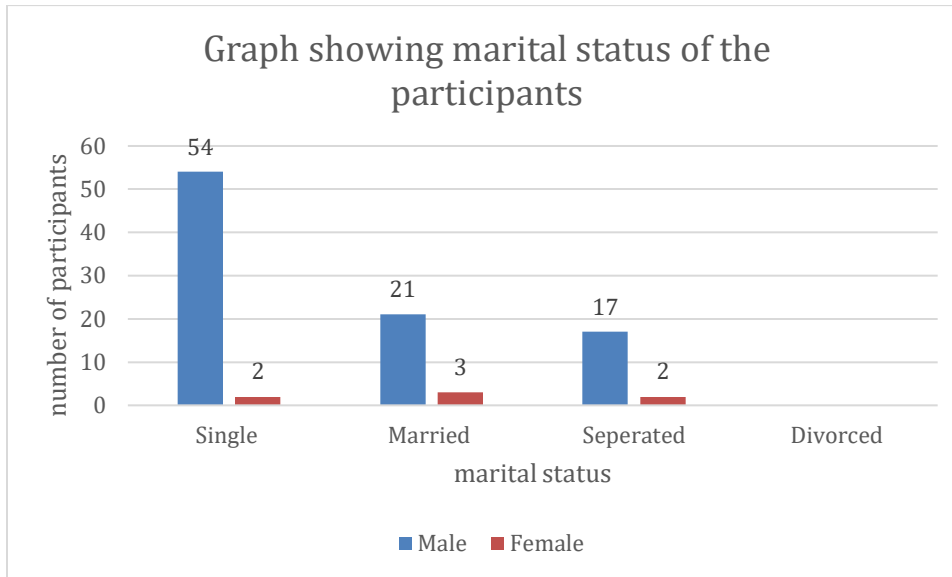


Figure 2 Graph showing marital status of the participants

Figure 2 shows the marital status of the participants. 56% of the participants were single while 24% and 19% of the participants were married and separated respectively. No participants in the study were divorced. 54/92 males were single, 21/92 males were married and 17 males were separated. 2 females were single, 3 and 2 females were married and separated respectively.

4.1.4 Education level of the participants

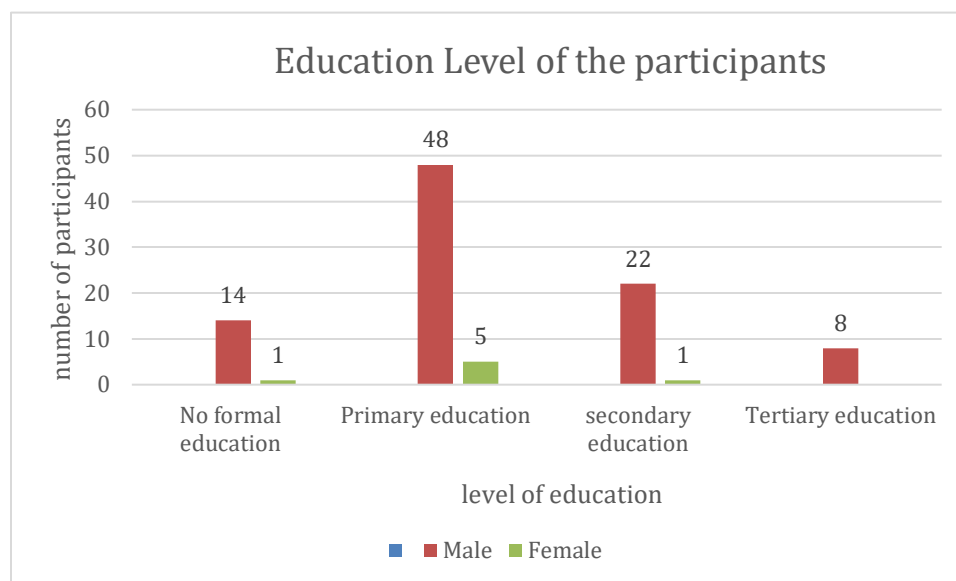


Figure 3

From the graph, 15.2% of the participants had not attained any form of education. Majority of the participants had gone to primary school 53% while 23% and 8% of the participants had attained secondary and tertiary education respectively. Majority of the male population (48 participants) had attained the primary level of education. 14 male participants had not gone to school, 22 had attained secondary education while 8 had achieved tertiary education. Five females had secondary level education while one had no formal education and the remainder had achieved tertiary education.

4.1.5 Religion of the participants

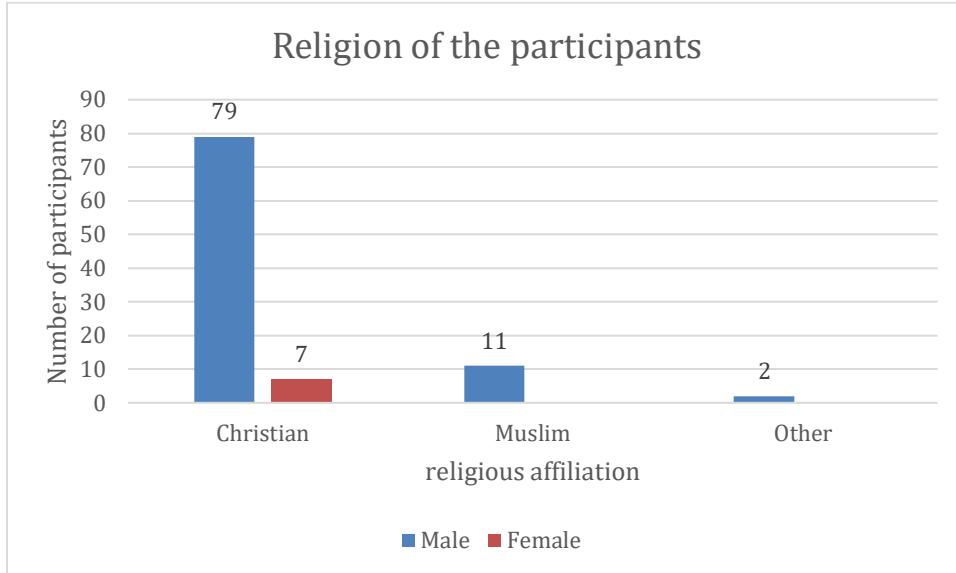


Figure 4

From the graph, majority of the study subjects were Christian (86%). Islamic participants were 11% while other religious denominations formed only 2 percent. All females in the study were Christians. 79 male participants were Christian, 11 were Muslim and 2 had other religious affiliations.

4.1.6 Employment status

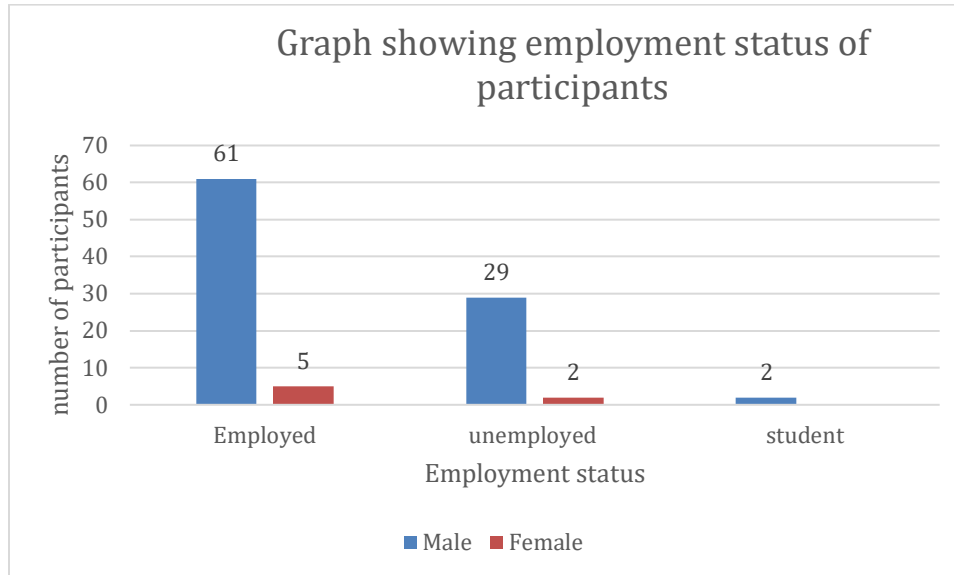


Figure 5

From the graph, majority of the study subjects were employed. 61 (63.3%) males had gainful employment, 29 (31.5%) were unemployed while 2 were still in school. Five females were employed while the remaining 2 had no formal employment.

4.1.7 Offense committed by participants

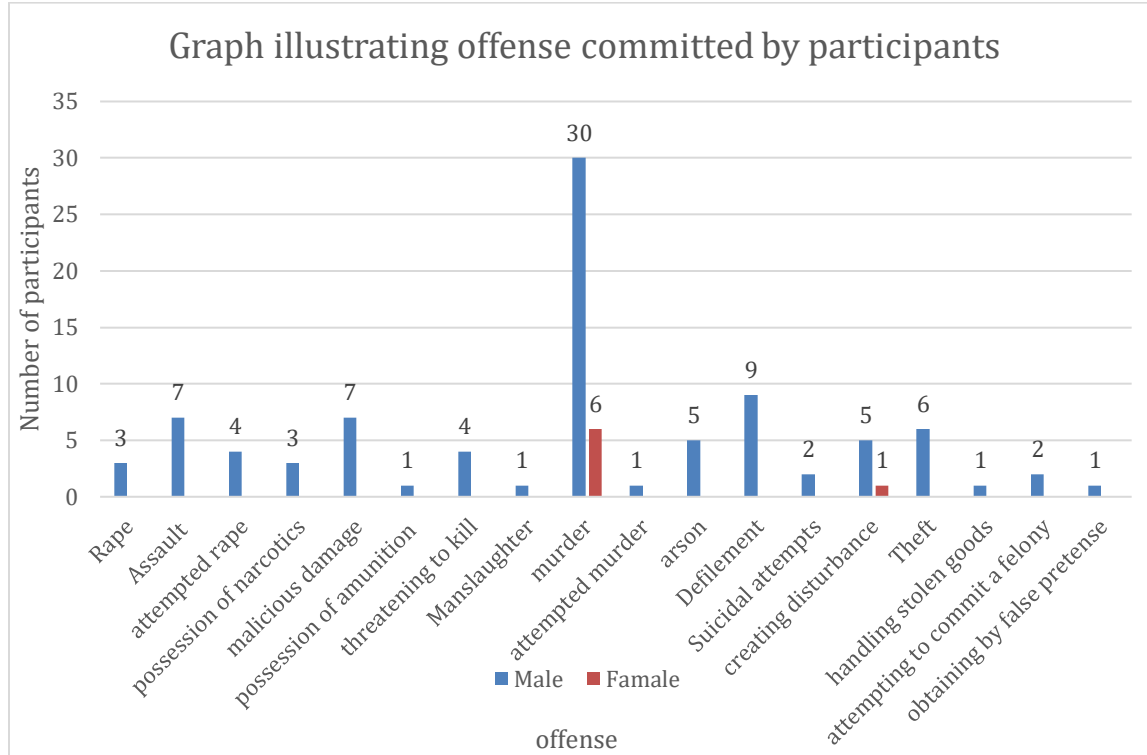


Figure 6

From the graph, murder (n=36, 36.3%) was the most frequent crime committed by the participants. Defilement (9 participants) and assault (7 participants) were the second and third most common crimes.

4.1.8 Admission status

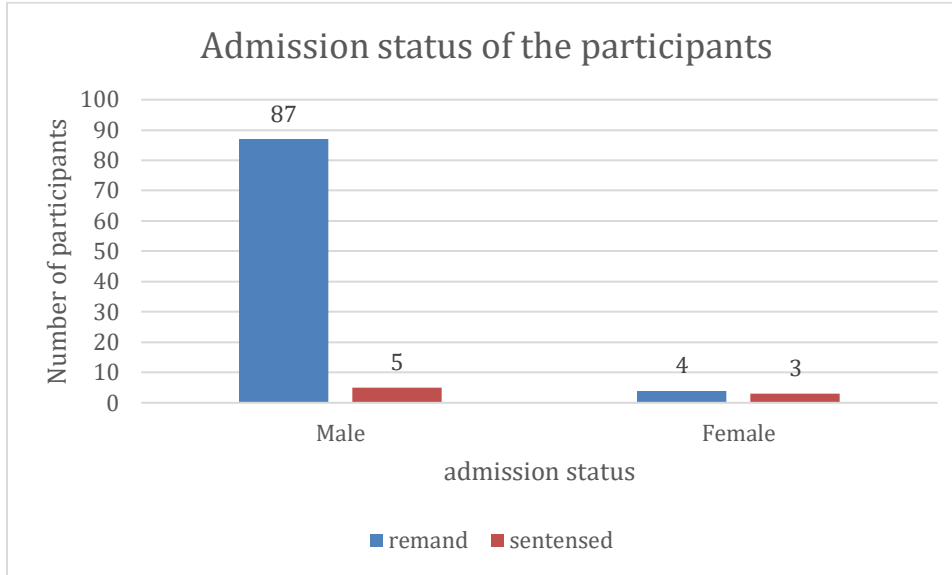


Figure 7

From the graph, majority of the participants were in remand (91 out of 99, 91.9%). 87 male participants were in remand while 5 had been sentenced. 4 females were in remand while 3 had been sentenced

4.1.9 Duration of stay in Mathari Maximum Security Unit

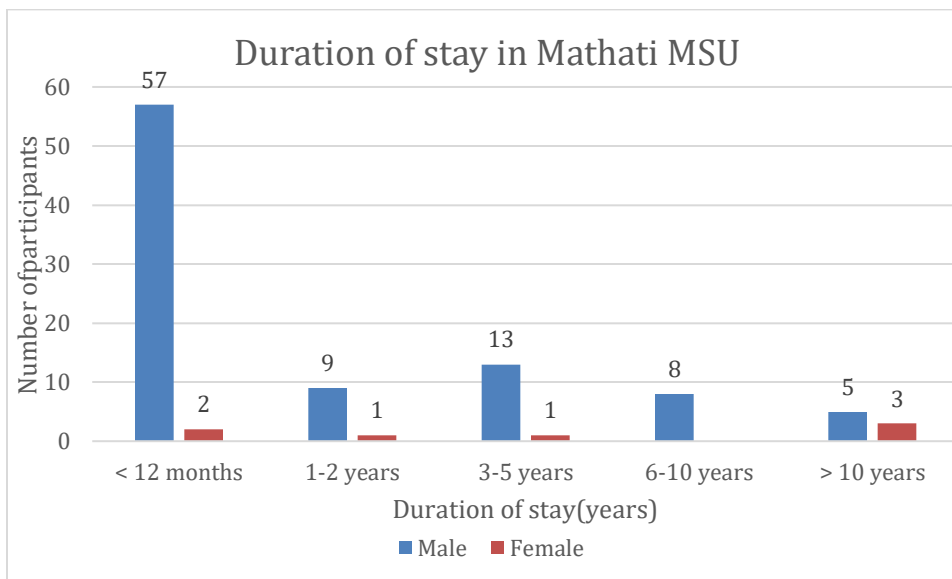


Figure 8

From the graph, majority of the participants (59 participants, 59.6%) had not completed a year in the Mathari maximum security unit. The second most frequent duration of stay was inmates who had been at the facility for 3-5 years (14 participants)

4.1.10 Family history of mental illness

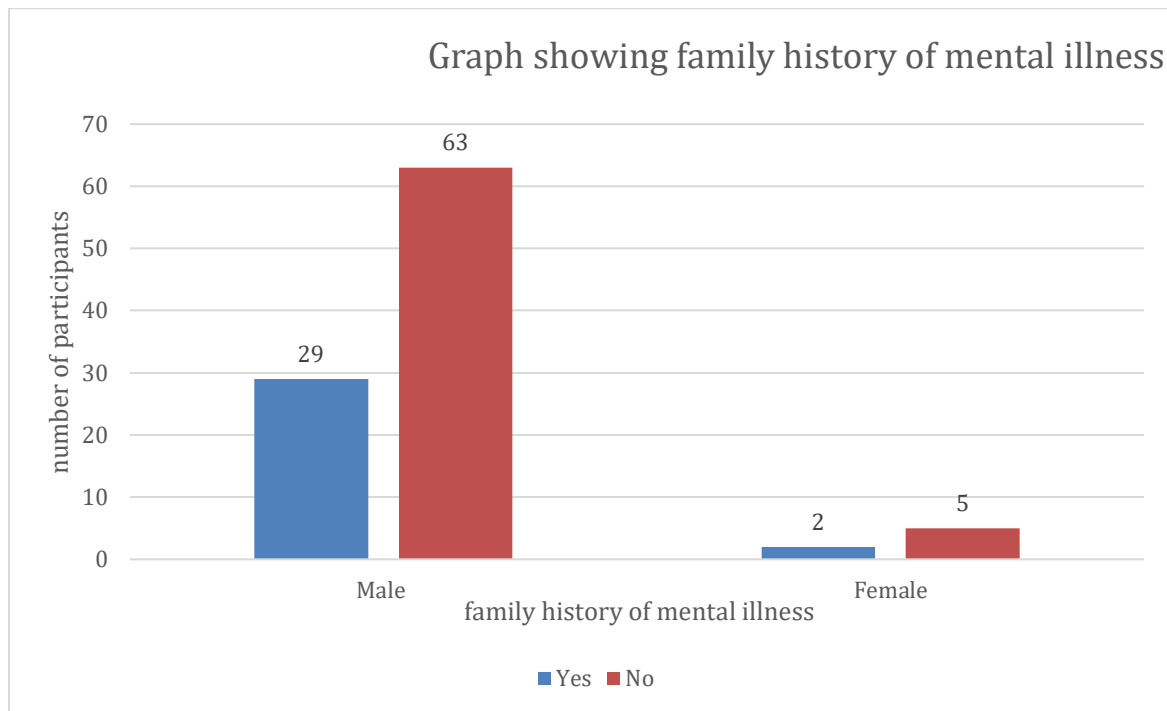


Figure 9

From the graph, most of the participants (68 participants, 68.7%) reported no family history of mental illness

4.2 Prevalence rate of suicidal behavior among the participants

Table 3--

Have you ever thought about or attempted to kill yourself

	Frequency	Percent
It was just a brief passing thought.	6	6.1
I have had a plan at least once to kill myself but did not try to do it	9	9.1
I have attempted to kill myself, but did not want to die/I have attempted to kill myself, and really hoped to die	20	20.2
Total	99	100.0

How likely is it that you will attempt suicide someday?

		Frequency	Percent
Valid	Never	88	88.9
	No chance at all	9	9.1
	Unlikely	1	1.0
	Likely	1	1.0
	Total	99	100.0

How often have you thought about killing yourself in the past year?

		Frequency	Percent
Valid	Never	76	76.8
	rarely(once)	7	7.1
	sometimes(twice)	5	5.1
	often(3-4times)	6	6.1
	very often (5 or more times)	5	5.1
	Total	99	100.0

Table 3 shows partial results from the SBQ-R questionnaire. In this table, we sought to analyze the prevalence of suicidal thoughts amongst the participants. From the table, 76/99 participants had never thought about killing themselves in the past year. 11/99 had thought about suicide more than twice in the past year. From this 11, 5 had thought about suicide more than five times. This gives a prevalence rate of 23.2% (n=23) for suicidal thoughts in the past year. The lifetime prevalence of suicidal thoughts amongst the participants showed that 35/99 (35.3%) participants had ever thought of killing themselves. Out of this 35 participants, 20 participants had attempted suicide, an overall prevalence of 20.2% for suicidal attempts. Overall, 11/99 participants were likely to commit suicide someday

Table 4

**Have you ever told someone that you were going to commit suicide, or
that you might do it?**

		Frequency	Percent
Valid	No	86	86.9
	Yes, at one time, but did not really want to die/Yes, at one time, and really wanted to die	8	8.1
	Yes, more than once, but did not want to do it/Yes, more than once, and really wanted to do it	5	5.1
	Total	99	100.0

Table 4 shows the remainder of the results from the SBQ-R questionnaire. From the table, 13/99 participants had conveyed thoughts to kill themselves to another person. Out of this, 5/13 really wanted to do it, showing they had concrete plans to commit suicide.

Table 5

Total Score

		Frequency	Percent
Valid	less than 7(low risk)	83	83.8
	greater than 8(high risk)	16	16.2
	Total	99	100.0

Table 5 shows the overall risk of committing suicide amongst the participants. From the table, 83/99 participants were at a low risk of committing suicide. 16/99 (16.2%) participants were at a higher risk of committing suicides

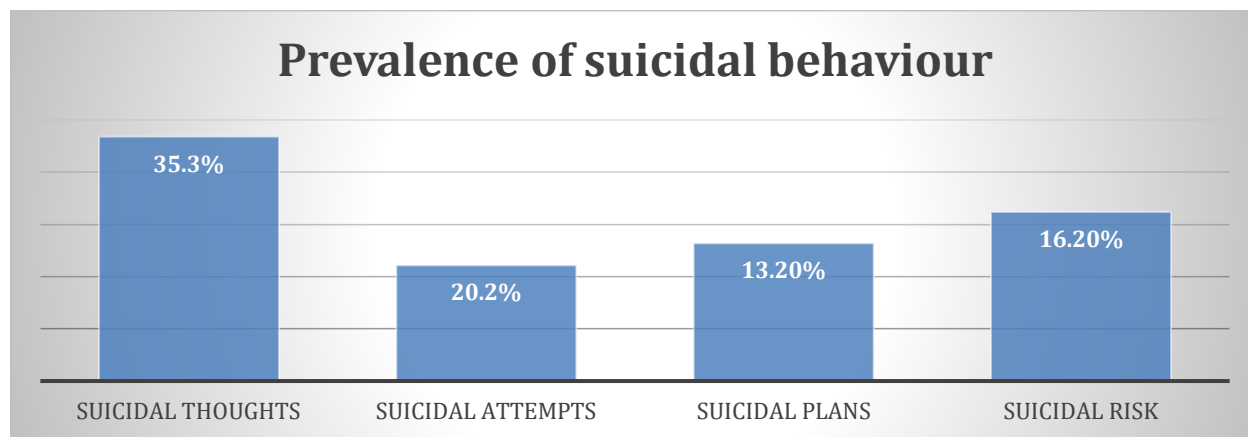


Figure 10 Prevalence of suicidal behavior

From the graph, the prevalence of suicidal thoughts stood at 35.3% while the prevalence of suicidal attempts stood at 20.2%. The burden of suicidal plans and suicidal risk stood at 13.2% and 16.2% respectively.

4.3 Psychiatric morbidity pattern in Mathari maximum security unit

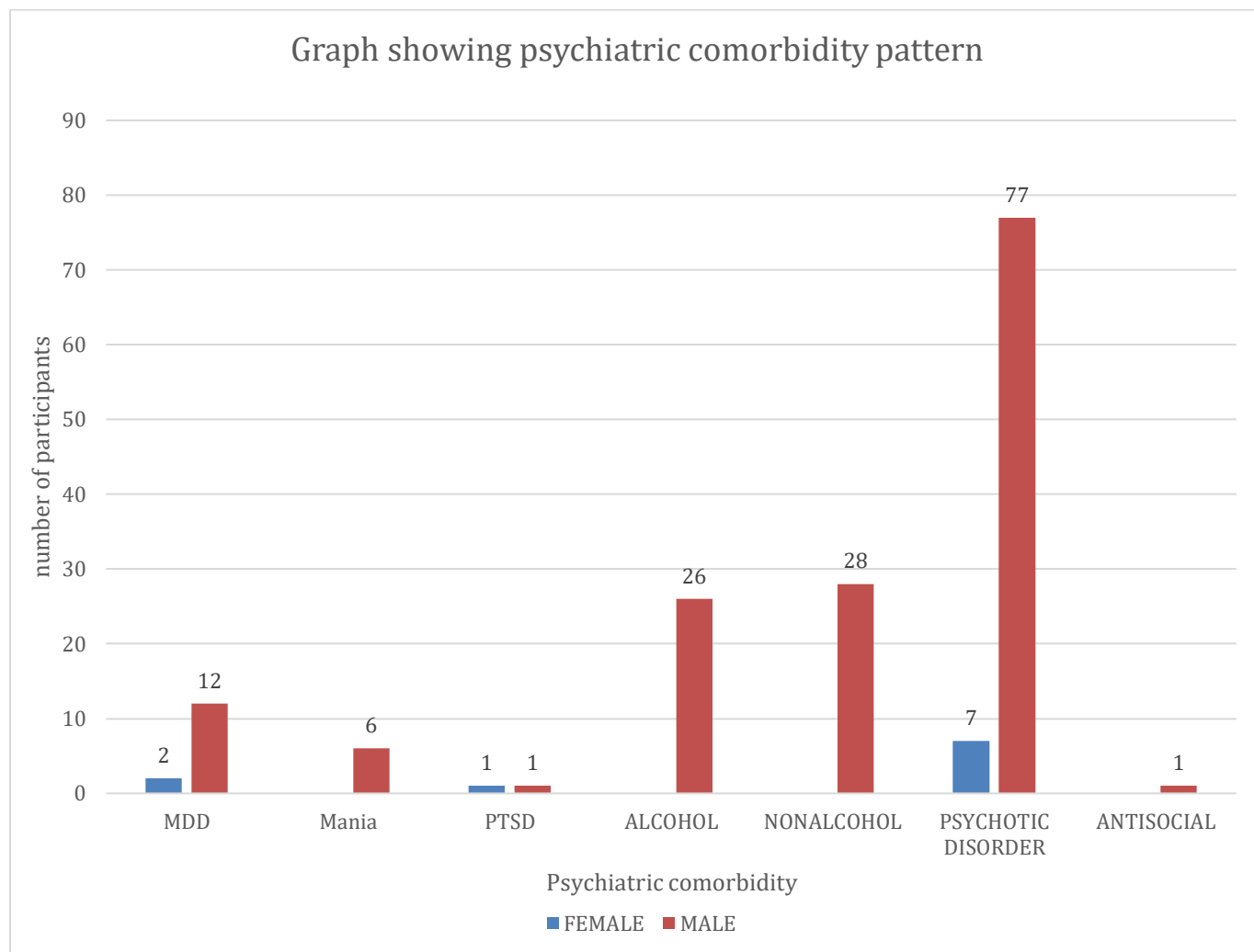


Figure 11

The graph above depicts the psychiatric morbidity pattern in Maximum security prison.

Psychotic disorder was the most prevalent mental illness in both males and females with 77 (77.85) males and 7 (7%) females affected. Alcohol use disorder and substance use disorder were the second most prevalent disorder with 26 and 28 participants affected respectively. This, however, was not the full picture as majority of the patients had a dual diagnosis.

Table 6

Psychiatric morbidity pattern

	Frequency	Percent
Valid MDD	3	3.0
Alcohol use disorder	4	4.0
Substance (non-alcohol) use disorder	1	1.0
Psychotic disorder	45	45.5
Antisocial	1	1.0
MDD + psychosis + PTSD	1	1.0
MDD + psychosis	6	6.1
SUD + psychosis	17	17.2
MDD + SUD + psychosis	6	6.1
AUD + SUD	1	1.0
Mania + psychosis	2	2.0
Mania + PTSD+ psychosis	1	1.0
SUD + Mania + Psychosis	1	1.0
AUD + psychosis	8	8.1
MDD + SUD	1	1.0
Mania + SUD	1	1.0
Total	99	100.0

Table 6 reveals the prevalence of dual diagnosis among participants. The most common combination was Substance Use Disorder and a psychotic disorder, accounting for 17.2% of cases. Alcohol Use Disorders paired with psychosis were also significant at 8.1%. Both Major Depressive Disorder bundled with Psychotic Disorder as well as Major Depressive Order combined with both substance use disorders and psychosis held third place equally, each contributing to 6.1% of instances observed in this population study . KEY: Alcohol Abuse (AUD), Drug-use problems(SUD), Severe Melancholia(MDD) , Post-Trauma Stress(PTSD).

4.4 Association between sociodemographic factors and suicidal behavior

In assessing the link between sociodemographic elements and suicidal tendencies, we executed logistic regression separately for each applicable variable in relation to suicide risk based on respondent answers from the SBQ-R questionnaire. Our findings were demonstrated using Odd Ratios (OR) denoting a p-value of less than 0.05 as statistically meaningful. We also employed a chi-square test to investigate any correlation found between the specified offense committed and an elevated suicide risk with significance underscored if a similar p-value was yielded.

Table 7 Association between sociodemographic variables and suicidal risk

Variables	COR(95%CI)	p-value	AOR(95%CI)	p-value
Age	0.969(0.921-1.019)	0.214	0.876(0.219-1.020)	0.076
Single	1.276(0.293-5.557)	0.745	1.069(0.251-4.553)	0.928
Married	1.936(0.308-12.166)	0.481	0.657(0.114-3.789)	0.068
Separated	1.137(0.286-4.524)	0.855	1.091(0.541-12.848)	0.319
Employed	1.821(0.154-21.582)	0.089	1.219(0.462-12.582)	0.055

Unemployed	15.00(0.663-19.548)	0.635	12.149(0.774-19.532)	0.453
Admission status(sentenced)	1.833(0.335-10.022)	0.484	1.788(0.442-19.221)	0.543
Family history of mental illness	1.912(0.639-5.720)	0.246	1.753(0.936-5.752)	0.257
no education	10.996(0.79-15.120)	0.074	8.875(0.956-12.150)	0.056
primary	9.041(1.407-58.079)	0.02	7.659(1.789-57-079)	0.023
Secondary	5.143(.972-16.126)	0.067	3.456(0.972-16.124)	0.097
Tertiary	3.884(0.593-25.452)	0.157	2.985(0.567-22.425)	0.213

From the table, being married had higher odds of being at risk for suicide than being single with an odds ratio of 1.936 (p-value = 0.481). Participants who had no formal education had higher risk of being suicidal with an odds ratio of 10.996 (p-value=0.074). Unemployed participants had a higher risk of being suicidal than employed participants with an odds ratio of 15.00 (p-value=0.89). Participants who had been sentenced by the courts had a higher risk of being suicidal than participants who were in remand with and odds ratio of 1.833 (p-value=0.484). Family history of mental illness increased the risk of suicide with an odds ratio of 1.912 (p-value=0.246). Increasing age decreased the risk of suicide; odds ratio of 0.969 (p-value=0.214). Key: COR > crude odds ratio, AOR > Adjusted odds ratio. Having primary level education was found to be statistically significant (p-value=0.02).

Table 8 Association between duration of stay in Mathari maximum security unit and suicidal risk

Variables	COR(95%CI)	p-value	AOR(95%CI)	p-value
< 12 months	1.942(0.462-4.562)	0.523	1.134(0.672-5.673)	0.654
1-2 years	0.856(0.096-7.630)	0.889	0.786(0.020-11.115)	0.776
3-5 years	0.769(0.156-3.793)	0.747	0.689(0.104-8.142)	0.677
6-10 years	1.034(0.69-7.360)	0.567	1.003(0.234-11.234)	0.435
> 10 years	1.833(0.335-10.022)	0.484	1.786(0.566-9.033)	0.347

From the table, participants who had been in Mathari maximum security unit for less than 12 months had the highest risk of suicide with a crude odds ratio of 1.942 (p-value=0.523). The second most prevalent cohort was participant who had been in Mathari maximum security unit for more than 10 years with a crude ratio of 1.833 (p-value=0.484).

Table 9

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.268 ^a	4	.687
Likelihood Ratio	3.494	4	.479

Linear-by-Linear Association	.168	1	.682
N of Valid Cases	99		

a. 4 cells (40.0%) have expected count less than 5.

The minimum expected count is 1.13.

From the table, Pearson chi-square was 2.268 (p-value=0.687). Therefore, there was no statistically significant association between duration of stay and suicidal risk.

Table 10 Association between age category and suicidal risk

Age category		Score		Total
		less than 7(low risk)	greater than 8(high risk)	
<20 years	Count	2	0	2
	Expected Count	1.7	0.3	2
20-29 years	Count	20	5	25
	Expected Count	21	4	25
30-39 years	Count	26	5	31
	Expected Count	26	5	31
40-49 years	Count	16	4	20
	Expected Count	16.8	3.2	20
50-59 years	Count	12	2	14
	Expected Count	11.7	2.3	14
60-69 years	Count	6	0	6
	Expected Count	5	1	6

70-79 years	Count	1	0	1
	Expected Count	0.8	0.2	1
Total	Count	83	16	99
	Expected Count	83	16	99

From the table, participants in the 30-39 years cohort were at a higher risk of suicide followed by participants in the 20-29 years cohort. Elderly patients between 60-79 years had the lowest risk of suicide.

Variables	COR(95%CI)	p-value	AOR(95%CI)	p-value
Assault	26.924(0.096-7.630)	0.246	22.456(0.335-10.022)	0.928
Attempted rape	1.144(0.308-12.166)	0.074	1.056(0.867-34.427)	0.068
Narcotics	1.274(0.79-15.120)	0.02	1.114(0.273-36.354)	0.319
malicious damage	9.692(0.567-22.425)	0.067	8.765(0.196-56.841)	0.055
Ammunition	1.005(0.639-5.720)	0.157	1.006(0.212-12.927)	0.453
Threatening to Kill	1.123(0.234-11.234)	0.484	1.089(0.408-27.726)	0.543
Manslaughter	1.183(0.327-14.456)	0.246	1.165(0.393-35.576)	0.257

Murder	32.309(0.836-21.396)	0.074	28.865(0.284-36.532)	0.056
Attempted Murder	1.179(0.055-17.698)	0.502	1.127(0.584-15.462)	0.423
Arson	1.189(0.672-15.124)	0.067	1.032(0.142-31.473)	0.097
Defilement	1.199(0.308-7.356)	0.157	1.004(0.629-23.054)	0.213
suicidal attempts	15.457(0.708-19.876)	0.076	11.665(0.846-12.456)	0.776
Creating Disturbance	1.894(0.068-12.177)	0.928	1.563(0.356-25.543)	0.677
Theft	16.154(0.432-19.698)	0.068	14.788(0.523-19.698)	0.435
Stolengoods	1.003(0.020-11.115)	0.319	1.002(0.634-7.356)	0.347
Rape	1.108(0.566-9.033)	0.055	1.099(0.764-5.756)	0.567
attempt to commit a felony	1.414(0.104-8.142)	0.054	1.235(0.965-22.457)	0.334

From the table, participants who had committed murder had the highest risk of suicide with a crude odds ratio of 32.309(p-value=0.074). Assault and theft were the second respectively with crude odds ratios of 26.294 (p-value=0.246) and 16.154 (p-value=0.068). Stealing goods had the lowest risk of suicide with a crude odds ratio of 1.003 (p-value=0.319).

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.174 ^a	17	.056
Likelihood Ratio	27.726	17	.048
Linear-by-Linear Association	.168	1	.682
N of Valid Cases	99		

- a. 29 cells (80.6%) have expected count less than 5.
- b. The minimum expected count is .16.

From the table, there the Pearson Chi-square stood at 27.174 with a p-value of 0.056. Therefore, there was no association between suicidal risk and the offense committed

4.5 Association between suicidal behavior and psychiatric comorbidities

We used a chi-square test to evaluate the relationship between mental health comorbidities and suicide risk, noting that if the p-value was under 0.05 it would be deemed statistically noteworthy.

Psychiatric Comorbidity pattern	Total Score	
	Less than 7(low risk)	greater than 8(high risk)
MDD	4	0

Alcohol use disorder	2	3
Substance (non-alcohol) use disorder	1	1
Psychotic disorder	36	5
Antisocial	1	0
MDD + psychosis	4	3
SUD + psychosis	22	2
MDD + SUD + Psychosis	4	2
Mania + Psychosis	3	0
Mania + SUD + Psychosis	2	0

According to the chart above, individuals with psychotic disorders (n=5) displayed the greatest likelihood of suicide. Those suffering from Alcohol Use Disorder (n=3), were next in line for this elevated risk calculation. Interestingly, patients given a dual diagnosis also showed heightened susceptibility especially those battling Major Depressive and Psychotic Disorders together (n=3). Such increased risks deeply affected people diagnosed simultaneously with major depressive disorder, substance abuse issues along side psychosis(n=3). For clarity - Alcohol Use Disorder is abbreviated as AUD while Substance use disorder goes by SUD; we see MDD refers to Major Depression whereas PTSD stands for Post Traumatic Stress.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.665 ^a	9	.054
Likelihood Ratio	15.266	9	.084
Linear-by-Linear Association	.027	1	.868
N of Valid Cases	95		

a. 16 cells (80.0%) have expected count less than 5.

The minimum expected count is .17.

From the table, there the likelihood ratio stood at 16.665 with a p-value of 0.054. Therefore, there was no association between psychiatric morbidity and risk of suicide.

CHAPTER 5: DISCUSSION

From our literature review, it is evident that suicide is among the leading causes of death globally and it is a rising global health issue and psychiatric emergency. Suicidal rates are highest in Lower middle-income countries, majority being in the African continent. Kenya experiences the highest suicidal rates in the East African region. Forensic psychiatry patients form a substantial proportion of suicidal deaths. This is because they are at an increased risk of suicide as they bare a double risk of mental illness and incarceration. This chapter discusses the results of our study in three subtopics trying to highlight the sociodemographic characteristics of forensic psychiatry patients and the associations with suicide, prevalence rate of suicide and psychiatric comorbidity among these patients and the association between suicidal behavior psychiatric comorbidities.

5.1 Sociodemographic characteristics of forensic psychiatry patients at Mathari hospital

Research has shown that psychiatric patients have a significantly higher risk of suicide compared to the general population, ranging from 3 to 12 times higher. Various factors contribute to this increased risk, including being male, single, middle-aged, unemployed, having chronic illnesses, and having a history of mental illness or previous suicidal thoughts or attempts (Priscilla et al., 2020). Previous suicide attempts have been identified as the strongest predictor of increased suicide risk (Bitta et al., 2018). From our study, it was evident that unemployment, marital status, psychiatric morbidity especially psychotic disorders, level of education and family history of mental illness were pertinent risk factors for suicide. The risk factors for suicidal behavior extend from individual-level factors such as genetics, personality, and sexual orientation, to broader social and economic factors such as unemployment rates. Other factors include exposure to

trauma, family dynamics, mental disorders, life stressors, social support networks, socioeconomic status, cultural influences, and macroeconomic conditions (Priscilla et al., 2020). Inpatient psychiatric hospitalization further elevates the risk of suicide, with rates ranging from 5 to 10% higher compared to outpatient settings. Patients in forensic hospitals, who have a history of violent offenses and mental illness, are particularly vulnerable, often with prior suicidal attempts and a propensity for using violent methods (Voulgaris et al., 2018). Studies have shown significantly higher suicide rates among forensic patients compared to the general population, with 22 to 38 percent of patients in England and Wales reporting prior suicide attempts (Stinson et al., 2021). Factors associated with suicidal behavior in forensic settings include gender (females more at risk than males), age, duration of admission, and the nature of the committed crime (Jentz et al., 2022). Long-stay patients in forensic psychiatric health centers, particularly in China, often experience negative emotions and have a higher prevalence of suicidal thoughts and suicide attempts (Zhong et al., 2019). From our study, patients who had been in Mathari for less than 12 months were at a higher risk for suicide. This is in stark comparison with some of the literature around. A retrospective study in Malaysia showed 90% were males, mean age was 37.45 with the most common age group 30-39, 54% had a secondary level education, 59% were employed and most patients were single (40.9%) (Khamis et al, 2022). This was in keeping to our study findings except the level of education.

In a study on Relationship between sociodemographic characteristics, Psychiatric Burden and violent offence in maximum security prison in North-Central Nigeria, all patients were males, mean age of 32.1, commonest age group 15-34 years, majority were single (52%), secondary education (46.2%), Unemployment(38.3%) (Armiya'u & Adole, 2015). The difference seen with

the study was having a wider age band and majority of the patients in MNTRH had some form of gainful employment. This study was done in a male prison hence the different findings.

The offense committed was linked to suicidal behavior especially murder, theft and assault. This is consistent with literature showing that suicide is higher amongst patients who took part in violent crimes (Voulgaris et al., 2018).

5.2 Prevalence rate suicide behavior amongst forensic psychiatry patients

The World Health Organization (WHO) reveals that over 700,000 people die from suicide every year, accounting for roughly 1.3 percent of total worldwide deaths. Most suicides – about 77% - take place in developing countries with low to middle income levels. Previous notions suggested Africa had minimal instances of suicide but it is now understood this was probably due to underrepresentation because of the stigma attached to such acts within society there . In reality, the adjusted rate per age brackets points at a count of nearly 12 out every hundred thousand across the continent , although rates are much higher averaging almost seventy-two and half per one-hundred-thousand individuals in Lesotho alone. Kenya however leads East Africa when counting sheer numbers : four Kenyans succumb daily on average.

Suicide rates among patients in forensic psychiatry are considerably higher than that of the average population. Men within this subset show seven-fold and women demonstrate an increased rate by 40 fold compared to the general populace. Extensive research suggests a societal prevalence of around 36 percent for suicide attempts amongst these patients, with traumatic experiences from their early years being flagged as major influencers (Jentz et al., 2022). Recent findings unearthed startling numbers; lifetime prevalence was reported at about 35%, while relatively recent statistics revealed a frequency approaching near quarter i.e., approximately 23.4% during twelve months preceding our study period . The investigation

disclosed that relevant figures such as patient reportings on having drafted suicide plans stood at close to 13% ,while there were about one-fifth or nearly 20 % reportedly carrying out actual efforts towards it. Surveyors determined roughly 16 % standing on precarious ground bordering high risk whereas significant amount say over four-fifths approximatedly 84 per cent adjudged low-risk category when evaluated against suicidal tendencies. Male partakers exhibited escalated incidences relating life-ending endeavours rendering them more susceptible. On similar lines, patients identified under psychosis also demonstrated amped-up likelihoods beckoning looming danger. Furthermore, enlightenment gleaned through prior evaluations unveiled interesting data: female counterparts demonstrating spikier counts regarding driving themselves into peril's doorway unlike men (James et al., 2012) One plausible cause pointed out hinted upon patronage skewed highly toward males prevalent across forensically designated areas. Patients in forensic units are at higher risk of suicidal attempts and suicide due than the general population (Jordans et al., 2018) to the dual burden of having a psychiatric illness and being incarcerated due to a crime.

5.3 Psychiatric morbidity pattern and suicidal behavior

The results of the study show that the most prevalent psychiatric disorder among the patients was psychotic disorders at 45%. Majority of the patients had more than one psychiatric diagnosis with a dual diagnosis of substance use disorder and psychosis was most common followed closely by alcohol use disorder and psychosis. Major depressive disorder and psychosis were also prevalent.

These findings are similar to other studies done in forensic settings. Makale et al in a study in Turkey found that 40.7% of the patients in a high security forensic facility had psychosis with schizophrenia being the highest (Emir et al., 2022). A study in Ethiopia showed that 17.6% of

inpatient forensic psychiatry patients had a comorbid substance use disorder (Alem, 2017). In Namibia a study by Hilen et al showed that 67% of the patients had schizophrenia. It also showed that alcohol use and cannabis was a common comorbidity (Ndjaba, 2013).

This confirms that there is a relationship between crime and mental illness.

A research piece by L. Khasakhala and others in 2011 highlighted that a striking 61 percent of people exhibiting suicidal tendencies had past diagnoses for mental disorders. This was reiterated by Kwobah et al., who discovered a significant correlation between suicide attempts and mental health issues, particularly depression, anxiety disorders, and substance misuse cases being the most prevalent. The presence of psychotic symptoms too have been found to be associated with an increased likelihood of individuals trying to harm themselves intentionally - findings which were echoed within our own study's observations where we noted relationships among major depressive disorders alongside alcohol-related or other substance abuse problems having higher risks related with suicides.

A group of certain mental health conditions, such as major depressive disorder, bipolar disorder, schizophrenia, PTSD, borderline personality disorder and substance use disorders have been found to heighten the threat of suicide. These conditions bring with them turbulent emotional pain along with warped instincts and thought patterns that fuel suicidal tendencies. The co-occurrence of multiple psychiatric illnesses can compound in a manner amplifying one's risk for suicide even further. For instance having depression alongside substance abuse could lead to more serious symptoms indicating increased impulsive behavior and diminished judgment capabilities all contributing directly towards escalating chances for suicidal behavior. It is frequently noticed that common risk factors like susceptibility due to genetics or early life

trauma are shared between individuals struggling from several varying disorders who also show higher likelihoods toward suicidality.

CONCLUSION

Suicide is a significant global health issue and psychiatric emergency, with rising rates worldwide. Lower middle-income countries, particularly in Africa, experience the highest rates of suicide. Forensic psychiatry patients face a heightened risk of suicide due to the combination of mental illness and incarceration. This study was intended to analyse the prevalence of suicidal behavior among forensic psychiatry patients and the associated sociodemographic characteristics and psychiatric diagnoses. It was found that having lower levels of education was significantly linked to higher risk of suicidal behavior. Factors such as employment status, marital status, presence of psychotic disorders, and positive family history of mental illness also contribute to the risk of suicide in this population. The prevalence of suicidal behaviour among forensic psychiatry patients is higher than that of the general population, with men and individuals involved in violent crimes such as murder, defilement and assault being particularly at risk. Psychiatric morbidity, including psychosis, alcohol and other substance use disorder and having a dual diagnosis of major depressive disorder and psychosis, is strongly associated with suicidal behavior.

The study highlighted the significant role of mental illness in relation to suicidal behavior especially among patients in forensic units. Identifying and addressing these risk factors and providing comprehensive care for individuals with psychiatric illnesses is crucial in reducing rates of suicidal behavior and preventing actual suicides.

RECOMMENDATIONS

To address the significant global issue of suicide, particularly among forensic psychiatry patients, further research is needed to understand long-term outcomes and factors contributing to suicidal behavior. It is crucial to explore cultural factors surrounding suicide and suicidal behavior. Policy formulation should focus on comprehensive suicide prevention strategies, enhancing mental health services within forensic psychiatry settings, and promoting collaboration between mental health, law enforcement, and correctional systems.

Increased awareness and education among healthcare professionals will aid in reducing stigma and improving support for individuals at risk especially among patients in forensic hospitals as well as aid in identification of individuals at higher risk of suicidal behavior.

Further research is also needed especially among female forensic psychiatric patients as the numbers were significantly low. Research on their sociodemographic characteristics including offences committed, psychiatric diagnoses and risk factors for suicidal behavior would shed lighter. The study can provide a basis for further research among mentally ill offenders in prison settings.

LIMITATIONS

The study relied on recall and self-reporting and may thus have under reporting or over reporting. This was minimized by keeping the recall period short, proper structuring of questions and pretesting in order to get accurate information. The research was carried out only at MNTRH which only holds a small percentage of offenders with mental illness and may therefore not be generalisable. A comparison with persons who are mentally ill in the prisons would be ideal. The population of female patients was especially low and as such may not be generalizable or conclusive.

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